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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Richard E. Raby

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3M INNOVATIVE PROPERTIES COMPANY

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EXAMINER

BALLINGER, MICHAEL ROBERT

ART UNIT

PAPER NUMBER

3732

NOTIFICATION DATE

DELIVERY MODE

05/18/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/771,641	Applicant(s) RABY ET AL.	
	Examiner MICHAEL R. BALLINGER	Art Unit 3732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/17/08, 10/17/07 and 2/4/04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/20/09 and 12/17/08</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Annotated drawing</u> . |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 December 2008 has been entered. Currently claims 1-86 are pending.

Drawings

2. The drawings were received on 17 December 2008. These drawings are acceptable.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the sheath and button must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. The Examiner notes, the terms "button" and "sheath" as used in claims 38 and 74 do not alone adequately describe sufficient structure to support the limitations as claimed.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The amendment filed 17 December 2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: lines 9 to 14 of amended paragraph 0023 include subject matter not presented in the original disclosure. Specifically, "the techniques may readily be used to assist a practitioner in *placing, positioning, forming or otherwise designing* a wide variety of appliances such as buccal tubes 5B, sheaths 5D, arch wires 5E and other orthodontic appliance" does not have adequate support in the original disclosure. The Examiner notes claims 38 and 74 as originally filed states "wherein the orthodontic appliance comprises an orthodontic bracket, a buccal tube, a sheath, a button, or an arch wire." Clearly the subject matter Applicant is attempting to include in the amendment of the specification is not commensurate in scope with the original disclosure.

6. Applicant is required to cancel the new matter in the reply to this Office Action.

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Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 38 and 74 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner notes, the specification adequately enables one having ordinary skill in the art to apply the method for brackets and buccal tubes (as buccal tubes are well known, in the art and have similar geometric structure to brackets). However, the specification does not reasonably provide enablement for a sheath, a button, or an archwire. The sheath and button are not enabled because there is no physical description or illustration of precisely what applicant is considering a sheath or a button. Additionally, such terms are not well defined in the art and have no special technical mean. Therefore, it is unclear the Examiner what a sheath or button are and how they would be rendered and arranged with the planar guides as claimed. In regards to the archwire, the Examiner notes, such appliances are well known in the art; however, given the physical/geometric differences between the arch wire as claimed and bracket as describe the specification is not enabling as to how the planar guides aid the practitioner in placement of arch wires.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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10. Claims 5-11, 28, 30, 44-50, 64 and 78 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to what a midsagittal plane, midlateral plane, midfrontal plane, and an occlusal-gingival axis of the *orthodontic appliance* are. The Examiner notes, terms such as midsagittal are ordinarily used to describe an anatomic portion or plane. However, such terminology is not readily known in the art as a way of describing other, non-anatomic object. Therefore, the use of the terminology above is unclear and fails to particularly point out the claimed subject matter. For example, is a midsagittal plane of an orthodontic appliance as claim is always parallel to the mesial-distal planes of the dental arch or is the midsagittal plane of the orthodontic appliance dependent on the local orientation of the appliance? The use of the convention for anatomic planes in relation to a simple appliance in the same general space of the dental arch is confusing.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-4, 10, 12, 13, 18, 19, 31-35, 37, 38, 39-43, 49, 51-55, 73-78, and 80-82 rejected under 35 U.S.C. 102(b) as being anticipated by Chapoulaud et al. (U.S. 2002/0028417).

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13. Chapoulaud et al. disclose a method, system and medium comprising: displaying a digital representation of a tooth in a dental arch within a three-dimensional environment (see e.g. figure 5D, paragraph 0042) , displaying the planar guide (figure 5D, paragraph 0088) within the 3D environment as a visual aid to a practitioner in the placement of an orthodontic appliance relative to the dental arch (paragraph 0089 and paragraph 0091, lines 10-18), while displaying the distal representation of the tooth of the dental arch (see e.g. figure 5D-5F), wherein displaying the two dimensional planar guide comprises rendering the guide at a location that is based on a position of the appliance in the 3D environment (figures 5G, paragraph 0091). In addition, with regard to amended claims 4, 43, and 77, an operator 28 inputs data with respect to the tooth in the 3D environment (paragraph 57) and the planar guide receives input from the practitioner moving the placement of the orthodontic appliance with respect to the tooth in the 3D environment (paragraph 0091, lines 14-20).

14. With respect to amended claims 1 and 75, Chapoulaud further discloses a display for, or a programmable processor to display (i.e. computer 30, of figure 1), the two dimensional planar guide, which is inherent from figures 1 – 2 and figures 5, since the calculations of how to align the teeth positions could not be determined unless the planar guide was displayed relative to the teeth. Regarding amended claims 37 and 73, the same reasoning of inherency applies, as the purpose of the contour lines of the planar guide would be to indicate distance between the guide and the patient's teeth, as disclosed in paragraph 90 of Chapoulaud. The planar guide is within the 3D environment relative to a coordinate system. The planar guides are displayed as semi-transparent two-dimensional plane within the three-dimensional environment comprising at least two lines. Chapoulaud et al. show appliance adjusted by the practitioner on a computer so as to

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change the bracket relative to the tooth (paragraph 0091). Chapoulaud et al. show storing data that describes attributes for orthodontic appliances that include parameters such as torque angles (paragraph 0091).

15. Stored three-dimensional data of the teeth would include dimensions and distances of teeth. Chapoulaud et al. show displaying reference markers of points or tic marks at discrete intervals. A parallel object can be placed in the three-dimensional environment such that it is a constant distance to the displayed contour lines on the guide. Chapoulaud et al. show orthodontic appliance of a bracket. Chapoulaud et al. show controls provided on display of a computer for selecting various views or actuating various calculations or commands. Chapoulaud et al. show orthogonal x,y,z coordinates. Chapoulaud et al. show the computing device coupled via network to database (figure 1).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. Claims 5-9, 11, 14-17, 20-28, 36, 44-48, 50, 56-64, 67-72 and 83 – 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapoulaud et al.

19. Chapoulaud et al. disclose a method and system that shows the limitations as described above; however, they do not show planar guides representing guides other than what is understood to be midsagittal planar guide of a bracket. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the planar guides represent other visual locations of a bracket relative to a tooth. Chapoulaud et al. disclose a method and system that shows the limitations as described above; however, they do not show planar guides having different colors. Chapoulaud et al. teaches display of the three-dimensional teeth with each tooth in a different color. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system to have the planar guides in different colors in order to be able to identify them by color in view of Chapoulaud et al. Chapoulaud et al. show adjusting the color and transparency as noted by adjustments in brightness and shading disclosed. It would have been obvious to one of ordinary skill in the art to store planar guide data of attributes received input from the user. It would have been obvious to one of ordinary skill in the art to size or scale the guides with respect to the displayed tooth or teeth. It would have been an obvious matter of choice to one of ordinary skill in the art to visually enclose a volume of two planar guides. It would have been obvious to one of ordinary skill in the art as to attributes of the bracket including a shear angle.

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20. Regarding claims 85 and 86, Chapoulaud discloses the invention as claimed as discussed above, but does not teach penetrating the occlusal surface of the digital representation of the tooth or penetrating the distal edge of the digital representation of the tooth (rather he teaches running parallel). However, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify Chapoulaud's method by penetrating, rather than running parallel to, the occlusal and distal surfaces, in order to get a better picture of this part of the patient's anatomy.

21. Claims 29, 30, 65, 66, and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapoulaud et al. in view of Kopelman et al. (2003014509).

22. Chapoulaud et al. disclose a method and system that shows the limitations as described above; however, they do not show data of rules for orthodontic appliance. Kopelman et al. teach a method and system comprising data 110 of rules for applying the orthodontic appliance. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system to comprise data of rules in order to obtain a desired outcome of positioning and orientation in view of Kopelman et al.

Response to Arguments

23. Applicant's arguments filed 17 December 2008 have been fully considered but they are not persuasive.

24. Applicant has presented arguments regarding the 35 U.S.C. 112, first paragraph rejection of claims 38 and 74. The Examiner believes the above clarifies the rejection and address the issues at the core of Applicant's arguments.

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25. Regarding, the 35 U.S.C. 112, second paragraph, rejection of claims 5-11, 28, 30, 44-50, 64 and 78, the Examiner believes the above rejection clarifies the previous rejection and addresses Applicant's arguments on record.

26. The Applicant has also presented arguments regarding the 35 U.S.C. 102(b) rejections. Specifically, Applicant has argued Chapoulaud fails to teach or suggest limitations of independent claim 1 and 4 and notes, "If the Office Action is characterizing the computer as a planar guide, Applicant respectfully submits the Office Action appears to be misinterpreting Applicant's claim." The Examiner maintains Chapoulaud teaches the planar guides (see e.g. figure 5D, i.e. the white line lattice has been construed to cover the planar guide of applicant's claim), and also teaches the practitioner moving the placement of the appliance (paragraph 0091, clearly states "the bracket location on the surface of the tooth can also be adjusted by the orthodontist."). Additionally, Applicant states, "claims 1 and 4 require displaying a digital representation of a tooth within a 3D environment and displaying a two-dimensional planar guide with the same environment" which is not suggested or taught by Chapoulaud. The Examiner respectfully disagrees and notes FIG. 5D is a display of the computer display of Chapoulaud including a tooth and a planar guide in the same 3D environment.

27. Also, Applicant has argued, "Chapoulaud fails to disclose or suggest any planar guide that is rendered at a location that is base on a position of an orthodontic appliance within the 3D environment." The Examiner respectfully disagrees, and notes figure 5G (paragraph 0045) teaches orthodontic appliances (i.e. custom design appliance) which are rendered at a position based on the planar guides (i.e. rectangular representations show in figure 5G, see also, paragraph 0091).

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28. The Applicant further argues against the teachings of FIG 5 and paragraph 0090 of Chapoulaud. These arguments are not persuasive for reasons detailed in the above rejection of claims 1 and 4.

Conclusion

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL R. BALLINGER whose telephone number is (571)270-5567. The examiner can normally be reached on Monday-Friday 7:30 A.M to 5:00 P.M. EST.

30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cris Rodriguez can be reached on (571)272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

31. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael R Ballinger/
Examiner, Art Unit 3732
5/11/09

/Cris L. Rodriguez/
Supervisory Patent Examiner, Art Unit 3732